

Name	Formula	Lewis Structure	Hybridization	Shape
dichloro, difluoromethane	CCl ₂ F ₂	$\begin{array}{c} :\ddot{\text{C}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} - \text{C} - \ddot{\text{C}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} \end{array}$ 4σ $\delta\pi$	sp ³	tetrahedral
nitrate ion	NO ₃ ⁻	$\left[\begin{array}{c} :\ddot{\text{O}}\text{:} \\ \\ :\ddot{\text{O}}\text{:} - \text{N} - \ddot{\text{O}}\text{:} \\ \text{resonance} \end{array} \right]^-$ 3σ 1π	sp ²	trigonal planar
carbonate ion	CO ₃ ²⁻	$\left[\begin{array}{c} :\ddot{\text{O}}\text{:} \\ \\ :\ddot{\text{O}}\text{:} - \text{C} - \ddot{\text{O}}\text{:} \\ \text{resonance} \end{array} \right]^{2-}$ 3σ 1π	sp ²	trigonal planar
carbon tetrachloride	CCl ₄	$\begin{array}{c} :\ddot{\text{C}}\text{:} \\ \\ :\ddot{\text{C}}\text{:} - \text{C} - \ddot{\text{C}}\text{:} \\ \\ :\ddot{\text{C}}\text{:} \end{array}$ 4σ $\delta\pi$	sp ³	tetrahedral
xenon tetrafluoride	XeF ₄	$\begin{array}{c} :\ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} - \text{Xe} - \ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} \end{array}$ 4σ $\delta\pi$	d ² sp ³	square planar
arsenic trifluoride	AsF ₃	$\begin{array}{c} :\ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} - \text{As} - \ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} \end{array}$ 3σ $\delta\pi$	sp ³	pyramidal
formaldehyde	CH ₂ O	$\begin{array}{c} :\ddot{\text{O}}\text{:} \\ \\ \text{H} - \text{C} - \text{H} \end{array}$ 3σ 1π	sp ²	trigonal planar
chlorine trifluoride	ClF ₃	$\begin{array}{c} :\ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{C}}\text{:} - \ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} \end{array}$ 3σ $\delta\pi$	dsp ³	T-shaped
phosphorus pentafluoride	PF ₅	$\begin{array}{c} :\ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} - \text{P} - \ddot{\text{F}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} \end{array}$ 5σ $\delta\pi$	dsp ³	trigonal bipyramidal
beryllium dichloride	BeCl ₂	$\begin{array}{c} :\ddot{\text{C}}\text{:} - \text{Be} - \ddot{\text{C}}\text{:} \\ \\ :\ddot{\text{F}}\text{:} \end{array}$ 2σ $\delta\pi$	sp	linear

Homework:

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sulfur tetrafluoride	SF_4	$\begin{array}{c} \ddot{F} \\ \\ \ddot{F}-S-\ddot{F} \\ \\ \ddot{F} \end{array}$ 4σ 0π	dsp^3	seesaw
bromine pentafluoride	BrF_5	$\begin{array}{c} \ddot{F} \quad \ddot{F} \\ \quad / \\ \ddot{F}-Br-\ddot{F} \\ \quad \backslash \\ \ddot{F} \quad \ddot{F} \end{array}$ 5σ 0π	d^2sp^3	square pyramidal
ammonia	NH_3	$\begin{array}{c} H-N-H \\ \\ H \end{array}$ 3σ 0π	sp^3	pyramidal
xenon difluoride	XeF_2	$\begin{array}{c} \ddot{F} \quad \ddot{F} \\ \quad .. \\ .. - Xe - \ddot{F} \\ \\ \ddot{F} \end{array}$ 2σ 0π	dsp^3	linear
methane	CH_4	$\begin{array}{c} H \\ \\ H-C-H \\ \\ H \end{array}$ 4σ 0π	sp^3	tetrahedral
carbon monoxide	CO	$\begin{array}{c} :C\equiv O: \\ \\ 1\sigma \end{array}$ 1σ 0π	sp	linear
sulfate ion	SO_4^{2-}	$\left[\begin{array}{c} \ddot{O} \\ \\ \ddot{O}-S-\ddot{O} \\ \\ \ddot{O} \end{array} \right]^{2-}$ or $\left[\begin{array}{c} \ddot{O}: \\ \\ \ddot{O}-S-\ddot{O}: \\ \\ \ddot{O} \end{array} \right]$ resonance 4σ 2π	sp^3	tetrahedral
sulfur hexafluoride	SF_6	$\begin{array}{c} \ddot{F} \quad \ddot{F} \\ \quad / \\ \ddot{F}-S-\ddot{F} \\ \quad \backslash \\ \ddot{F} \quad \ddot{F} \end{array}$ 6σ 0π	d^2sp^3	octahedral
sulfur dioxide	SO_2	$2\sigma 1\pi$ $:\ddot{O}=\ddot{S}-\ddot{O}:$ or $:\ddot{O}=\ddot{S}=\ddot{O}:$ resonance $2\sigma 2\pi$	sp^2	bent
carbon dioxide	CO_2	$:\ddot{O}=C=\ddot{O}:$ 2σ 2π	sp	linear